ESCI 549 - ENERGY DATA MANAGEMENT
COURSE SYLLABUS – FALL 2018
TUESDAYS 5:30PM -8:15PM

BASIC INFORMATION

Instructor's name: Dr. Oner Celepcikay
Classroom: KWG 128
Office location: TBA
Office hours: Tuesdays 4:00pm-5:30pm (by appointment)
Phone Number: 713-966-9354
Email Address: oner.celepcikay@rice.edu

COURSE DESCRIPTION

In the era of big data and data science, most businesses and institutions realize the power of data. An organization's data is recognized as the most vital asset of an enterprise, even some states; "data is the new oil". In any organization data is the main foundation of information, knowledge and ultimately the wisdom for correct decisions and actions. If the data is relevant, complete, accurate, timely, consistent, meaningful and usable, then it will surely help in the growth of the organization. If not, it can prove to be a useless and even harmful asset.

Oil&Gas companies are not unique in how much they rely on well structured information, but E&P is one of the activities where the financial impact of data is higher. There is a big shortage of qualified personnel that have experience running data management activities for E&P.

This course covers the foundations, principles and methodology of data management and data governance to ensure such high quality data with a focus in Energy Industry.

COURSE OBJECTIVES

At the end of this course, students will understand;

- The driving forces for an organization behind the urgency of having well-rounded, relevant data management plan
- The process of developing such organization-wide data management plans.
- The data governance framework and best practices in the Oil & Gas industry
- The importance of organization-wide standards and impact on creating business value.
- The impact of good data management on business intelligence and decision-making

COURSE SCHEDULE:

This syllabus is only a guide for the course and is subject to change with advanced notice.

Week	Date	Topic
1	08/21/2018	Introduction to Data - Why Data is Critical
2	08/28/2018	Data Management in Oil & Gas
3	09/04/2018	Data Governance Framework
4	09/11/2018	Principles of Data Governance
5	09/25/2018	Data management Focus Areas
6	10/02/2018	Data Management Case Study I & Guest Speaker
7	10/09/2018	Data Quality Management
8	10/16/2018	**Midterm Exam**
9	10/23/2018	Data Governance and Data Security
10	10/30/2018	Deployment and Monitoring Data Management
11	11/06/2018	Data Management and Business Intelligence
12	11/13/2018	**Student Presentations (Data Management Plans)**
13	11/20/2018	Data Management in the era of Big Data and Cloud
14	**11/27/2018**	**FINAL REVIEW**

COURSE PREREQUISITES

None

REQUIRED TEXTBOOK

There is no required textbook. We will have recommended reading throughout the semester.

COURSE TOPICS TO BE COVERED

1. Introduction to Data - Why Data is Critical in the Era of Data Revolution

- The role of Data in 21st Century (Data Vision and Mission)
- Best Practices from various industries utilizing Data
- Motivation behind Data Management and Governance

2. Data Management in Oil & Gas

- Why Oil & Gas Data is different
- Opportunities and Challenges of Data Management in Energy Industry
- Examples of Good Data Management Practices from the industry

3. Data Governance Framework

- Data Warehousing
- Master Data Management
- Risk Management
- Data Security
- Policies and Procedures

4. Principles of Data Governance

- Transparency
- Accountability
- Standardization
    - The difference between standards and rules deriving from the nature of the data, and those deriving from the business purpose the data meets;
    - The role of, value of and need for data quality standards, business rules, policies, and procedures, and how these are used to lead compliance activities

5. Data management Focus Areas

- The corporate data strategy and its relationship to the business strategy
- Policies and Procedures
- Quality
- Compliance
- Business Intelligence

6. Data Quality Management

- The value of data quality and data quality management,

- E&P business workflows and how data governance impacts these
- Data Management Organization Models and Structures
- Data Roles and Responsibilities / Ownership
- Business consequences of poor data quality (lost value, increased costs, reputational damage)
- Identifying, monitoring for, handling, and reporting data quality issues

7. Deployment and Monitoring Data Management

- Measuring the effectiveness of data management
- Monitoring metrics for good data management
- Assessing the impact of current data management on the effectiveness of the asset

8. Data Management and Business Intelligence

9. Data Governance and Data Security

10. Data Management in the era of Big Data and Cloud

11. Case Studies - Guest Speakers (we will have 4 case study presentations by guest speakers from the Energy Industry presenting interesting applications from their companies)

EVALUATION PROCEDURES AND GRADING CRITERIA

Indicate how students are evaluated, including tests, quizzes, papers, assignments, weight of the assignments, etc. Clearly identify how the course grades are determined.

Activity	Weight
Reading Assignments & Discussions	20%
Midterm Exam	20%
Data Management Plan Report & Presentation	25%
Final Exam	25%
In class Participation	10%

Your final course grade will be determined by following standard college formula:

90-100→"A", 80-89→"B", 70-79→"C", 60-69→"D", 0-59→"F"

RICE HONOR CODE:

All students will be held to the standards of the Rice Honor Code, a code that you pledged to honor when you matriculated at this institution. If you are unfamiliar with the details of this code and how it is administered, you should consult the Honor System Handbook at http://honor.rice.edu/honor-system-handbook/. This handbook outlines the University's expectations for the integrity of your academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. If you have questions about what plagiarism, proper citations for group work, etc. there is no shame in asking: ignorance is not an excuse for failing to uphold academic integrity.

DISABILITY SUPPORT SERVICES:

If you have a documented disability or other condition that may affect your academic performance you should: 1) make sure this documentation is on file with Disability Support Services (Allen Center, Room 111 / adarice@rice.edu / x5841) to determine the accommodations you need; and 2) talk with me as early as possible in order to support you in meeting course expectations.